

Team Members



Team Lead



Lucía Carballo Testing Engineer



Roderick Pacis Simulations Engineer



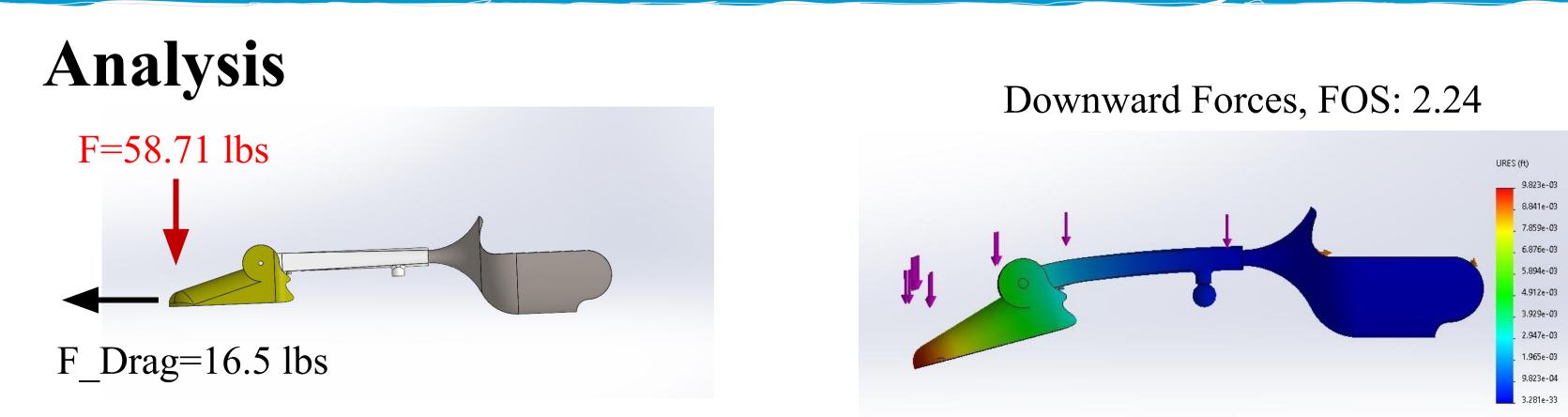
Joshua Warden Manufacturing Engineer



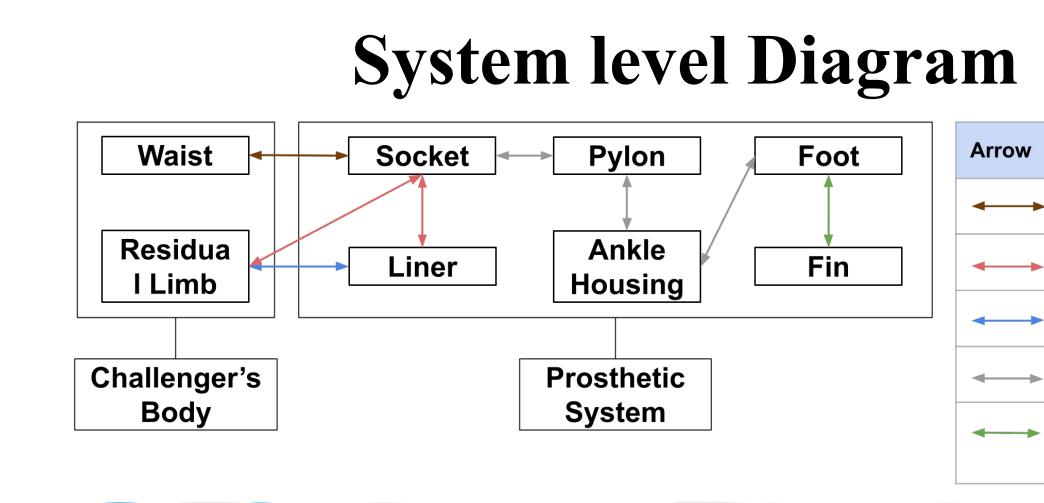
Anthony Rooks *R&D Engineer*

Project Overview

This project was sponsored by Quality of Life + (QL+), a nonprofit organization that partners with universities to deliver solutions to veterans, law enforcers, and other nation-serving responders with life-altering injuries. The team proudly took on the project specific to Caleb Brewer, a wounded veteran with a left leg below-the-knee amputation and a right leg above-the-knee amputation. Mr. Brewer is engaged in various physical activities, with a special one being SCUBA diving; his amputations made it difficult to find functional SCUBA fins. The challenge was to design and build a prosthetic scuba fin solution for Mr. Brewer with a modular approach so that the prosthesis would also be compatible with other amputees who wish to SCUBA dive.



Modular Prosthetic SCUBA Fins By NextGen Prosthetics



Prototypes



System Prototype 1 (1:4 scale)



Foot and Fin prototype (1:1 scale); our foot CAD model was 3D printed to test fit it in a standard SCUBA fin before it was casted out of silicone.



Ankle Joint Prototyp This part experienced purpose of reducing



Prototype 2 (1:1 scale);

Upward Forces,

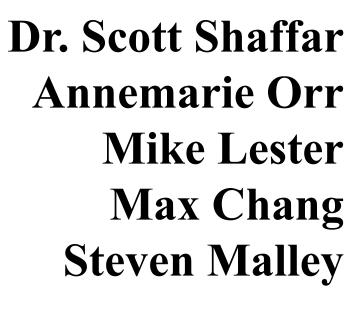
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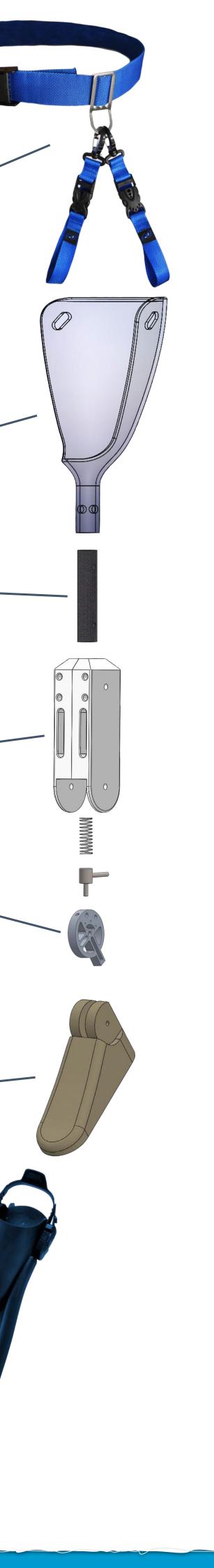






Type of Connection	
Belt and straps	
Grip	
- Vacuum	
Pin fastener	
Fin's securing heel band	Diver's belt and securing straps to fasten prosthesis to
	body
	Half-socket to brace residual limb and connect the rest of the prosthesis. Compression sleeves will further secure socket to limb
	Carbon fiber pylon, cut to user's needed length
pes 1,2, and 3 (1:1 scale).	
ed two redesigns for the g weight.	Ankle housing unit, enabling the adjustment of the foot's angle underwater
	Ankle joint allowing for rotation of the foot
; for an underwater test.	Silicone foot, compatible with standard SCUBA fin sizes allowing for user to have access
	to broad market of SCUBA fins
FOS: 1.82	Standard SCUBA fin
URES (H) 1.180e-02 1.062e-02 9.442e-03 8.262e-03 7.082e-03 5.901e-03 4.721e-03 3.541e-03 2.361e-03 1.180e-03 3.281e-33	





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